

## Claims

[1] A method for dynamic IP address allocation, which is for a mobile subscriber station receiving an IP address allocated thereto in a wireless portable Internet system, the method comprising:

- (a) the mobile subscriber station performing initial ranging upon entering a first base station;
- (b) performing an authentication with the first base station;
- (c) transmitting a registration request message including mobile IP version information to be used to the first base station;
- (d) transmitting a mobile IP registration request message during a MAC connection establishment, in response to an agent advertisement of the first base station; and
- (e) receiving a mobile IP registration reply message during the MAC connection establishment.

[2] The method as claimed in claim 1, wherein the steps (d) and (e) are performed through a secondary management connection.

[3] The method as claimed in claim 2, wherein the mobile IP version information is a flag of the IP version parameter established as a mobile IPv4.

[4] The method as claimed in claim 2, wherein the first base station operates as a home agent.

[5] The method as claimed in claim 4, wherein the step (e) further comprises: the mobile subscriber station receiving an IP address and a home address assigned thereto.

[6] A method for dynamic IP address allocation, which is for a first base station allocating a dynamic IP to a mobile subscriber station in a wireless portable Internet system, the method comprising:

- (a) the first base station performing initial ranging with the mobile subscriber station;
- (b) performing an authentication with the mobile subscriber station;
- (c) receiving a registration request message including a flag set as a mobile IP to check an IP version;
- (d) receiving a mobile IP registration request message from the mobile subscriber station during a MAC connection establishment, in response to an agent advertisement; and

- (c) transmitting a mobile IP registration reply message to the mobile subscriber station during the MAC connection establishment.
- [7] The method as claimed in claim 6, wherein the steps (d) and (e) are performed through a secondary management connection.
- [8] The method as claimed in claim 7, wherein the step (e) further comprises: assigning an IP address and a home address to the mobile subscriber station.
- [9] The method as claimed in claim 8, wherein the IP address is allocated from a DHCP (Dynamic Host Configuration Protocol) server.
- [10] A method for a subscriber station to move to a second base station from a first base station and register a mobile IP in a wireless portable Internet system, the method comprising:
  - (a) the second base station and the mobile subscriber station performing a handover;
  - (b) the mobile subscriber station performing a re-registration with the second base station;
  - (c) transmitting a re-registration request message including a flag set as a mobile IP to the second base station;
  - (d) the mobile subscriber station acquiring a COA (Care Of Address), in response to an agent advertisement of the second base station;
  - (e) the mobile subscriber station transmitting a mobile IP registration request message for an IP address allocated from the first base station during a MAC connection establishment;
  - (f) the second base station relaying the mobile IP registration request message to the first base station during the MAC connection establishment; and
  - (g) the first base station transmitting a reply message to the mobile IP registration request message to the mobile subscriber station via the second base station.
- [11] The method as claimed in claim 10, wherein the steps (d) to (g) are performed through a secondary management connection.
- [12] The method as claimed in claim 11, further comprising:
  - binding the COA and the IP address allocated from the first base station.
- [13] The method as claimed in claim 12, wherein the first base station is set as a home agent, the second base station being set as a foreign agent.
- [14] A method for a subscriber station to move to a second base station from a first base station and register a mobile IP in a wireless portable Internet system, the

method comprising:

- (a) the second base station and the mobile subscriber station performing a handover;
- (b) transmitting a registration request message including a flag established by a mobile IP to the second base station;
- (c) the second base station determining whether the first and second base station have the same subset information;
- (d) the second base station terminating transmission of an agent advertisement to the subscriber station when the first and second base station are found to have the same subset information; and
- (e) registering a mobile IP through a secondary management connection when the first and second base station are found to have different subset information.

[15]

The method of claim 14, wherein (e) comprises:

- the subscriber station acquiring a COA (care of address) in response to an agent advertisement of the second base station;
- the subscriber station transmitting a mobile IP registration request message on an IP address allocated by the first base station while establishing an MAC connection;
- the second base station relaying the mobile IP registration request message to the first base station while establishing the MAC connection; and
- the first base station transmitting a return message on mobile IP registration request message to the subscriber station through the second base station.

[16]

A dynamic IP address allocation method for a subscriber station to receive a dynamic IP address in a wireless portable Internet system, comprising:

- the subscriber station entering a first base station and performing initial ranging;
- performing authentication with the first base station;
- transmitting a registration request message further including a parameter for notifying usage of a mobile IP to the first base station;
- transmitting a mobile IP registration request message while establishing an MAC connection, in response to an agent advertisement of the first base station; and
- receiving the mobile IP registration request message while establishing the MAC connection.